

## ABSTRACT OF THE DISCLOSURE

Salient poles 3a formed at a rotor core 3 are structured such that their facing surfaces facing permanent magnets 1a and 1b are formed in the shapes of circular arcs of which the radii at the circumferential center portion and at the circumferential end portions are different from each other. The angle between the line connecting one of the circumferential outlines of one of the salient poles 3a and the rotation center of the rotor core 3 and the line connecting the other circumferential outline of the same salient pole 3a and the rotation center of the rotor core 3 is not less than 100 degrees. Permanent magnets 1a and 1b are structured such that the radial thickness B of each circumferential end portion is from 90% to 95% of the radial thickness A of each circumferential center portion, so as to have circular arc surfaces of which center positions are different from each other. As a result, by supplying an electric current to the rotor coils, a constant electro-magnetic torque is available within a relative angular displacement range of more than 90 degrees of the rotor and the stator, and the magnitude of electro-magnetic torque is in proportion to the magnitude of the exciting current. When the exciting current is supplied in the direction opposite to that of the above current, the direction of the electro-magnetic torque is opposite.